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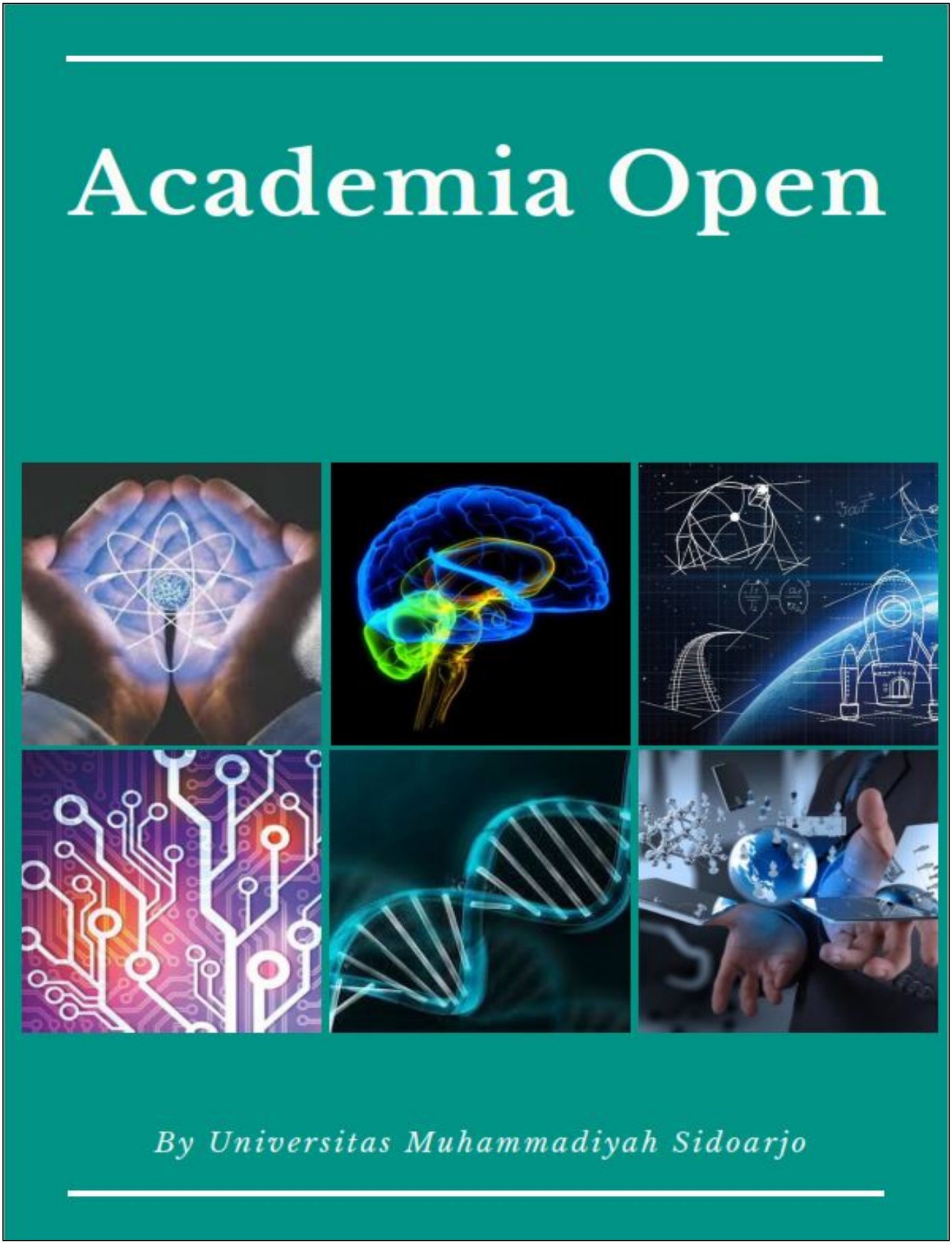

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Quality of Life in Patients with Knee Osteoarthritis: A Cross-Sectional Study in Baaquba City

Kualitas Hidup pada Pasien Osteoartritis Lutut: Sebuah Studi Cross-Sectional di Kota Baaquba

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Abstract

Background: Knee osteoarthritis (KOA) is a common degenerative joint disease that significantly impacts the quality of life (QoL) of elderly individuals, often leading to severe disability. **Specific Background:** KOA, a prevalent condition primarily affecting middle-aged women, is exacerbated by risk factors like obesity, genetics, and reduced physical activity. **Knowledge Gap:** Despite existing studies on KOA, there is limited research on its impact on QoL in the Iraqi context, particularly in Baqubah City. **Aims:** The study evaluated the quality of life (QoL) of KOA patients in Baqubah, Iraq, considering physical, psychological, social, and functional aspects, and identifying influencing factors. **Results:** Data were collected from 374 patients at Baqubah Teaching Hospital, using a structured and validated HRQOL questionnaire. The study revealed that KOA patients experienced a significantly reduced QoL, especially in the physical and functional domains. Females and those with a longer illness duration reported worse outcomes. Obesity and overweight were found to be common among patients, further exacerbating the disease. **Novelty:** This study evaluates KOA's impact on QoL in Baqubah, revealing high prevalence and significant negative effects on daily activities. **Implications:** The study highlights the need for targeted interventions to enhance the quality of life for KOA patients in Baqubah, focusing on weight management, physiotherapy, and improved public health strategies.

Highlights:

1. KOA severely impairs physical and functional quality of life in patients.
2. Obesity and inactivity are key modifiable risk factors for KOA.
3. Women and long-term sufferers face greater QoL challenges.

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Keywords: Knee Osteoarthritis, Quality of Life, Risk Factors, Obesity, Baqubah

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Introduction

Knee OA is a common disease and a major disabling disorder that profoundly affects health-related quality of life, and even more so in the elderly (1). Osteoarthritis is mostly initiated by damage to the articular cartilage and conjoint joint space is reduced as the result. It elevates the amount of friction between the two bones greatly and this trigger inflammation and pain to be detected by the nerve receptors around the joint area (2). Chondrocytes and joint tissues, and indeed the articular cartilage, therefore respond to a many faceted interplay of genetics, hormones, aging, mechanical and metabolic factors in OA: a multifactorial illness (5).Aging has been identified as the single most significant risk factor in the development of OA; numerous cellular pathways have been postulated as the mechanism by which this aging impinges on joint degeneration in OA (3 The odds ratio for the postindustrial group was 2.1 times higher (95% CI: 1.5 – 3.1) for presence of Kne OA than the early industrial group the odds ratio did not change even if the analysis was done after stratifying according to Age, BMI and other factors (4).

The most typical feature of knee OA has been inevitably defined by the progressive alteration of the hyaline cartilage lining the knee joint, which is a ‘’slick, glistening, smooth, glassy tissue that forms the structural and functional fundament of synovial joints of the vertebrate’. According to biochemical parameter a shift from anabolic to catabolic functions destabilises cartilage homeostasis (6) Chondrocytes become dysfunctional and secrete MMPs leading to synthesis of matrix components of cartilage (7)

aim of study

a. To assess the overall quality of life in patients with knee osteoarthritis residing in Baaquba city .

b. To evaluate the impact of knee OA on various domain of quality of life.

c. To identify factor associated with quality of life in patients with k OA such as age , gender , duration of illness and level of physical activity.

Methods

Prior to data collection, the researcher obtained official administrative authorizations for the research. Data collection lasted approximately 5 months, from January 16, 2024 to May 9, 2024. This study was conducted in the Rheumatology clinic at Baaquba teaching Hospital. This hospital is located in Diyala Governorate, Baaquba City, Iraq.

Inclusion Criteria was all Patients with age 18 years or more of both sexes diagnosed with knee osteoarthritis from the residents of Baaquba governorate who were able to offer verbal consent and were willing to participate in this study. Exclusion Criteria was Individuals suffering from any other type of osteoarthritis, except knee OA, were excluded.

The study targeted 374 adult patients with knee osteoarthritis who had previously received a diagnosis from rheumatologists using a convenient sampling technique. The researcher developed and refined the self-structured questionnaire after conducting a comprehensive review of relevant literature and publications.

Results and Discussion

A total of 374 patients with knee osteoarthritis (KOA) were involved in this cross-sectional study to represent findings, whereas table 4-1 shows that the mean age was 58.6 ± 10.6 years. The age group with the highest percentage of knee OA was (50–59) years old (32.1%), while the age group with the lowest percentage (2.7%) was (>80) years old, as shown in table (4-1) .Females comprised the highest percentage, (64.7%), compared with males (35.3%). The majority of participants were married (71.1%), and the minority were single (2.4%); most of them (65.1%) lived in urban areas. Table 4-1 shows that 53.2% of the participants had a family history of knee OA.

Demographic Characteristics	Classes	N=374	%
Age (years)	<40years	13	3.5
	40---49	60	16.0
	50---59	120	32.1
	60---69	104	27.8
	70---79	67	17.9
	=>80years	10	2.7
	Mean±SD (Range)	58.6±10.6 (30-83)	

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sex	Male	132	35.3
	Female	242	64.7
BMI (Kg/m2)	Underweight (below 18.5)	-	-
	Normal(18.5-24.9)	23	6.1
	Overweight (25-29.9)	167	44.7
	Obese (30 and above)	184	49.2
Occupation	Employee	58	15.5
	Worker	34	9.1
	Housewife	201	53.7
	Retired	81	21.7
Marital status	Single	9	2.4
	Married	266	71.1
	Divorced	14	3.7
	Widowed	85	22.7
Educational level	Illiterate	116	31.0
	Primary school	123	32.9
	Intermediate school	64	17.1
	High school	41	11.0
	College	30	8.0
	Postgraduate degree	-	-
Residence	Urban	243	65.1
	Rural	130	34.9

Table 1. *Distribution of the Study Sample according to Demographic Characteristics*

Table (4-2) presents the distribution of quality of life scores among participants. The scores are categorized into three levels: poor, fair, and good. A significant proportion of participants either have a quality of life that is categorized as poor (42.5%) or fair (57.5%). Notably, none of the participants reported a good quality of life score. The mean quality of life score is 82.2, with a standard deviation of 17.9, indicating some variability in participants' quality of life. The range of scores (41–117) suggests that while most participants are within the poor to fair range, some are closer to the threshold for good quality of life.

Quality of life score(1-158)	Poor (<79)	159	42.5
	Fair (79-118)	215	57.5
	Good (>118)	-	-
Mean±SD (Range)		82.2±17.9 (41-117)	

Table 2. *distribution of the study patients according to Quality of Life Scores*

Table (4-3): In this table, there is a significant difference in quality of life scores across different age groups (P value= 0.0001*). Participants aged 50–59 had the highest percentage reporting a fair quality of life (40.0%). The (60–69) age group had the highest percentage reporting poor quality of life (34.0%). A smaller proportion of the youngest (<40 years) and oldest (≥80 years) groups reported poor quality of life compared to middle-aged groups. There was no significant difference in quality of life scores between males and females (P value = 0.119). Both genders showed a higher percentage reporting a fair quality of life compared to a poor quality of life. A slightly higher percentage of females (69.2%) reported poor quality of life compared to males (30.8%). There was no significant difference in quality of life scores across different BMI categories (P value = 0.428). The majority of participants in both overweight and obese categories reported a fair quality of life (46.5% for both). A higher percentage of participants with obesity (52.8%) reported poor quality of life compared to those with normal weight (5.0%).

		Quality of life (1-158)				P value
		Poor (<79)		Fair (79-118)		
		No	%	No	%	
Age (years)	<40years	4	2.5	9	4.2	0.0001*
	40---49	7	4.4	53	24.7	
	50---59	34	21.4	86	40.0	

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	60---69	54	34.0	50	23.3	
	70---79	51	32.1	16	7.4	
	=>80years	9	5.7	1	.5	
sex	Male	49	30.8	83	38.6	0.119
	Female	110	69.2	132	61.4	
BMI (Kg/m2)	Underweight	-	-	-	-	0.428
	Normal	8	5.0	15	7.0	
	Overweight	67	42.1	100	46.5	
	Obese	84	52.8	100	46.5	
*Significant difference between percentages using Pearson Chi-square test (c2-test) at 0.05 level.						

Table 3. *Association between General Characteristics of the Study Variables and Quality of Life*

Table (4-4) reveals that there is a significant difference in quality of life scores across different occupations (P value = 0.0001*). Housewives and retired individuals reported higher percentages of poor quality of life (60.4% and 32.1%, respectively). Employees had a higher percentage reporting a fair quality of life (22.8%). Regarding marital status, there is a significant difference in quality of life scores across different marital statuses (P value = 0.0001*). Married participants had the highest percentage reporting a fair quality of life (88.4%). Widowed participants had a high percentage reporting poor quality of life (45.3%). Regarding educational level, although the difference is not statistically significant (P value = 0.057), trends suggest variations in quality of life based on educational level. Illiterate participants reported a higher percentage of poor quality of life (38.4%) compared to those with higher educational levels. Participants with primary school education had the highest percentage reporting a fair quality of life (33.5%). Regarding residence, there was no significant difference in quality of life scores between urban and rural residents (P value = 0.570). Both urban and rural residents reported similar percentages for poor and fair quality of life.

		Quality of life (1-158)				P value
		Poor (<79)		Fair (79-118)		
		No	%	No	%	
Occupation	Employee	9	5.7	49	22.8	0.0001*
	Worker	3	1.9	31	14.4	
	Housewife	96	60.4	105	48.8	
	Retired	51	32.1	30	14.0	
Marital status	Single	4	2.5	5	2.3	0.0001*
	Married	76	47.8	190	88.4	
	Divorced	7	4.4	7	3.3	
	Widowed	72	45.3	13	6.0	
Educational level	Illiterate	61	38.4	55	25.6	0.057
	Primary school	51	32.1	72	33.5	
	Intermediate school	25	15.7	39	18.1	
	High school	12	7.5	29	13.5	
	College	10	6.3	20	9.3	
	Postgraduate degree	-	-	-	-	
Residence	Urban	101	63.5	142	66.4	0.570
	Rural	58	36.5	72	33.6	
*Significant difference between percentages using Pearson Chi-square test (c2-test) at 0.05 level.						

Table 4. *association of quality of life with occupation, marital status, educational level, and residence*

Table 4-5 shows that there is a significant difference in quality of life scores based on the duration of the disease (P value = 0.0001*). Participants with a disease duration of less than 1 year had a higher percentage reporting a fair quality of life (56.3%). Participants with a disease duration of 1-4 years had a high percentage reporting poor quality of life (44.7%). Those with a disease duration of 5–9 years also reported poor quality of life (25.2%), and none with a disease duration of 10 years or more reported fair quality of life. Regarding the time of the first visit, there is a significant difference in quality of life scores based on the time of the first visit (P value = 0.0001*). Participants who visited a healthcare provider within the last 6 months had a higher percentage reporting a fair quality of life (58.6%). Those who had their first visit 1-4 years ago had a balanced distribution between poor

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(34.6%) and fair (31.2%) quality of life. Participants with a first visit 5 or more years ago had a high percentage reporting poor quality of life (22.6%).

		Quality of life (1-158)				P value
		Poor (<79)		Fair (79-118)		
		No	%	No	%	
Duration of disease (years)	<1year	32	20.1	121	56.3	0.0001*
	1---4	71	44.7	85	39.5	
	5---9	40	25.2	9	4.2	
	=>10years	16	10.1	-	-	
Time of first visit (years)	<6months	40	25.2	126	58.6	0.0001*
	6---11months	28	17.6	21	9.8	
	1---4years	55	34.6	67	31.2	
	=>5years	36	22.6	1	.5	
*Significant difference between percentages using Pearson Chi-square test (c2-test) at 0.05 level.						

Table 5. *Association of Quality of Life with Duration of Disease and Time of First Visit*

Discussion

The age of participants ranged from 30 to 83 years, with a mean age of 58.6 years (SD 10.6). The majority of participants were in the 50-59 and 60-69 age groups, representing 32.1% and 27.8% of the sample, respectively. This result, in agreement with a study conducted in Japan, found that prevalence was observed in middle-aged females (50-59 years old) (Sasaki et al., 2020). This distribution highlights that knee osteoarthritis predominantly affects middle-aged and older adults, consistent with the known epidemiology of the disease.

In the study population, there were more females (64.7%) than males (35.3%). Findings of this study match earlier research in South Korea, which suggests that women experience osteoarthritis more frequently, possibly due to a higher fat mass paired with a lower extremity muscle mass associated with the presence and degree of knee OA (Sasaki et al., 2020). According to the study, 53.2% of those involved have a family history of knee OA. In accord with a study performed in India, this research found that the onset of osteoarthritis was connected to family history, as half (50.6%) of participants with a family history had the condition.

A great majority of the participants fell into either the overweight category (44.7%) or the obese category (49.2%), with none identified as underweight. Only 6.1% had a normal BMI. The high rate of overweight and obesity among participants is in keeping with a study undertaken at Al-Sadder Hospital in Baghdad (2017), because research has shown that excess body weight is a recognized risk factor for the onset and progression of knee osteoarthritis (Al-Yasseri et al., 2019). It points out the value of managing weight effectively in this segment to likely ease symptoms and slow the onset of disease.

After the highest percentage, retired individuals came in at 21.7%. There were 15.5% employees along with 9.1% workers in the sample. This work conforms to a study in Mosul hospitals that found housewives were the largest group of participants (74.6%) (Ahmad and Al-Jwary, 2023). One might explain the heavily represented housewives and retired persons in the sample by looking at its age distribution; these populations generally consist of older adults at risk of osteoarthritis. A big part of the participants either lacked literacy (31.0%), or only received primary school education (32.9%). Fewer participants reported having an intermediate school (17.1%) or high school (11.0%) education, and only 8.0% had attended college; none of the participants had completed a postgraduate degree. Likewise, the findings of this study concur with those of Ji Yeon Lee et al. who show that poor income, positions without supervisory duties, and insufficient education are related to a greater prevalence of knee OA (Lee et al., 2021). An educational profile may influence the participants' skills in obtaining and using healthcare information, which might in turn affect disease management and its outcomes.

High-exercise participants, those who exceed 1500 METs (metabolic equivalent of task) for vigorous activity and 3000 METs for moderate activity, make up 7.8% of the study sample. A small percentage of participants reach or exceed these high activity levels, suggesting that this is a minority. Regarding moderate activity of the individuals, 26.7% have moderate levels of physical activity (vigorous < 1500 METS and moderate < 3000 METs, but > 600 METs). Another Iraqi study found that only 2.3% of teachers 40 years of age and older with knee osteoporosis engage in high- intensity activities, 47% engage in low-intensity activities, and 19.7% engage in moderate-intensity activities, with others remaining sedentary (Hussien and Abdul Raheem, 2020).

This category includes those who exercise enough to comply with basic health recommendations but fall short of exceeding higher activity levels. The results of this survey indicate that a considerable proportion of the population attempts to maintain an active lifestyle, despite potential obstacles to raising their levels of activity. This is indicated by the prevalence of moderate exercise.

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Approximately 65.5% of the individuals are classified as having poor physical activity (less than 600 METs). This suggests that physical inactivity is a problem that many people in the research population face. Knee osteoarthritis (OA) patients have a similar pattern of sedentary behavior, according to the study "Effectiveness of text messages for decreasing inactive behavior in patients with knee osteoarthritis." (Sliepen et al., 2018).

Regarding the association between the general characteristics of the studied variables and quality of life, age appears to significantly influence quality of life. Regarding below 40 years, only 2.5% of individuals reported poor quality of life; 50-59 years, a significant portion, 40.0% reported fair quality; 60-69 years, 34.0% reported poor quality; and >=80 years, only 0.5% reported fair quality, indicating a potentially challenging phase for very elderly individuals.

About occupation, the quality of life differs significantly among different occupational groups (P = 0.0001). Employees a higher percentage (22.8%) report a fair quality of life compared to a poor quality of life (5.7%). Workers: 14.4% report a fair quality of life, compared to 1.9% reporting a poor quality of life. Housewives 48.8% report a fair quality of life, while 60.4% report a poor quality of life, indicating a substantial portion in the poor category. Retired individuals (14.0%) report a fair quality of life compared to 32.1%) reporting a poor quality of life, suggesting retirees are more likely to have a poor quality of life. Studies by Júlia, et al. conducted in Brazil (2014) and by Hyung, et al., conducted in S. Korea (2013) have found that individuals with low education typically engage in manual labor in their professional lives, or frequent physical labor. Additionally, individuals over 60 years old and those who identify as female may be more susceptible to the progression of knee osteoporosis, which is associated with a worse quality of life (Reis et al., 2014, Jhun et al., 2013).

Furthermore, regarding marital status, there is a significant difference in quality of life based on marital status (P = 0.0001). In the case of single patients, the percentages are low but close, with (2.5%) reporting poor quality of life and. In the case of married patients, a significantly higher percentage (88.4%) report a fair quality of life compared to those reporting poor (47.8%).

There is no significant difference in quality of life based on educational level (P = 0.057), though the differences are notable. Illiterate (25.6%) report a fair quality of life, while (38.4%) report a poor quality of life. Primary school 33.5 percent report a fair quality of life compared to 32.1 percent reporting a poor quality of life. College (9.3%) report a fair quality of life, while (6.3%) report a poor quality of life. This result disagree with a study conducted in brazil (2015) by Kawano et al. which found significant relationship between the level of education and the level of osteoarthritis (Kawano et al., 2015).

There is no significant difference in quality of life based on residence (P = 0.570). Urban was (66.4%) report a fair quality of life, compared to (63.5%) reporting a poor quality of life, while rural (33.6%) report a fair quality of life, compared to (36.5%) reporting a poor quality of life.

There is a significant difference in quality of life based on the duration of the disease (P = 0.0001). A significant number of individuals with a disease duration of less than 1 year report a fair quality of life (56.3%). As the duration of the disease increases, the percentage of individuals reporting poor quality of life increases significantly, with those having the disease for 1-4 years and 5-9 years showing higher poor quality of life percentages (44.7% and 25.2%, respectively). Individuals with the disease for ≥10 years have no representation in the fair quality of life category, all falling into the poor quality of life category (10.1%). These results agree with other study finding conducted in Egypt (2016) by Aml s et al., which find closely similar finding (Salama et al., 2016).

The study found that individuals who visited clinics within the first 6 months significantly reported a fair quality of life (58.6%). As the time to the first visit increased, the rates of individuals reporting poor quality of life increased, with those visiting within 1-4 years and 25 years (34.6% and 22.6%, respectively) showing higher rates of poor quality of life. Only 0.5% of individuals who waited ≥5 years for their first visit reported a fair quality of life, indicating early detection of chronic diseases such as osteoarthritis of the knee by visiting healthcare providers and specialists is essential to developing strategies to prevent complications and, at the same time, can significantly enhance their overall health and quality of life.

Conclusion

This study provides valuable insights into the prevalence, risk factors, and impact of knee osteoarthritis (KOA) among patients in Baqubah.

1. KOA predominantly targets people within middle aged with female being more affected than males.. Diet also has a very close connection as a cause of the disease another factor that leads to the development of the condition is pedigree.

2. Obesity and Overweight were found to be common physic and electro-physiotherapy officers with 40% and 50% respectively having high BMI meaning that obesity and overweight are risk factors to KOA..

3. Physical activity is generally reduced in patients with KOA, and further reduction in activity has an adverse effect

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on the disease process..

4. KOA has a strong and negative influence of the quality of life of those who have severe symptoms and a long illness history.

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